PARAGON CONTROLS INCORPORATED

SPM-4000

Guardian Infinity Space Pressurization Monitor and Controller

Operation & Maintenance Manual

Engineered for accuracy, applicability, durability and simplicity

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1. INTRODUCTION

This user manual provides information on product features and guides you through all basic functionality.

1.1. BASIC OPERATION

The Guardian Infinity is a true differential space pressure measurement system engineered to combine the operability of today's microprocessor technology with state-of-the-art, industrial grade, highly accurate, ultra low range, differential pressure sensing cells. The combination of these two technologies ensures exceptional long-term stability and ±0.25% measurement accuracy.

Field configuration of engineering units, operating mode, operating range, process noise filtering, alarm set points, etc, are performed via password protected intuitive menus that are accessed through the integral six button touch pad. Device monitoring and configuration can also be performed by a building management system through either a LonWorks® or BACnet®-MS/TP communication network as well as through a local IR communication port using a laptop or handheld PDA. An additional network communication port is available for connection to a Paragon remote pressure monitor. The front panel includes an 8 line graphic display for local indication of the space pressure and device configuration, LED indication of operational mode and status, and an audible alarm with alarm acknowledge button.

The Guardian Infinity offers an optional controller that utilizes a proprietary algorithm which results in true three mode control incorporating proportional band, integral (reset) and inverse derivative (P, I, 1/D) controller functionality and tuning. The controller will provide responsive modulation of a control damper or variable speed drive ensuring a stable space pressure is maintained.

1.2. SAFETY

1.2.1. Electrical Connections

Before any electrical connections are made, ensure the **POWER SWITCH** is in the **OFF** position.

1.2.2. Static Electricity

The circuit board contains components which are susceptible to damage caused by static electrical discharge. Should it be necessary to remove the circuit board from the enclosure, appropriate precautions must first be taken to ensure that the operator and the circuit board are at the same electrical potential.

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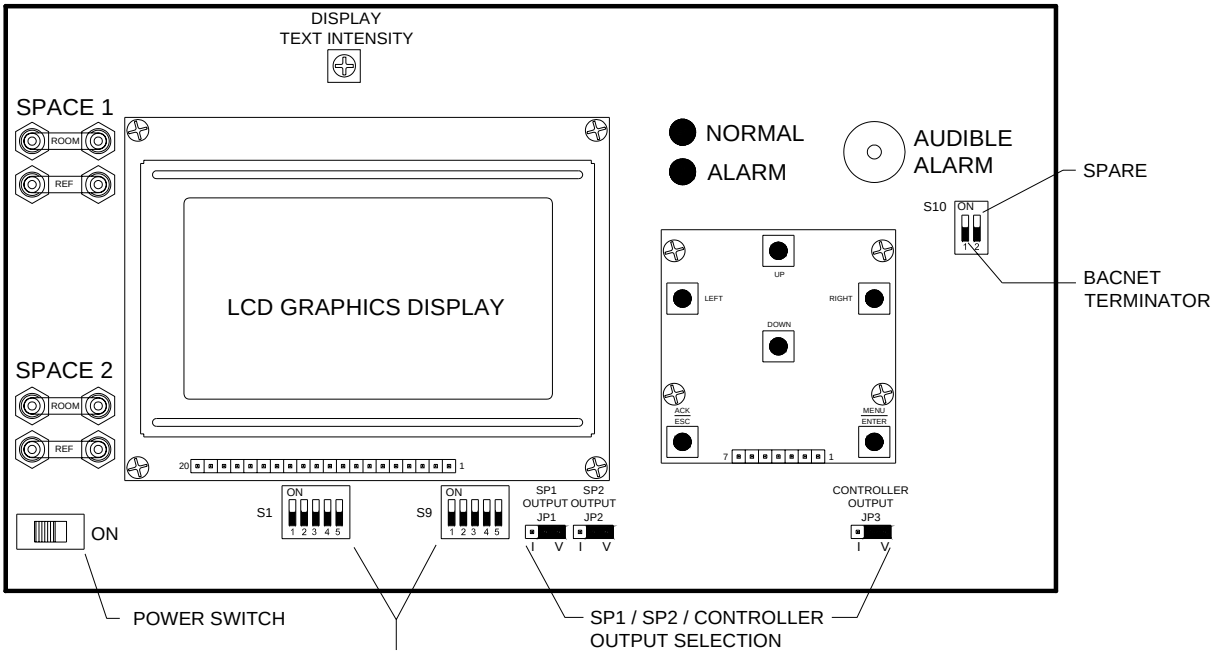
2. HARDWARE CONFIGURATION

The Guardian Infinity consists of the pressure measurement circuits, digital input/outputs, analog inputs/outputs (Voltage/Current), BACnet / LonWorks and IrDA communication and Graphical LCD unit in a single board.

2.1. GUARDIAN INFINITY COMPONENT LAYOUT

2.1.1. Front Component Layout

Refer to Figure 2.0 for clarification on the front component layout.



VOLTAGE/CURRENT INPUT SELECTION			
INPUT	**SWITCH S1**	**SWITCH S9**	**I/V SELECTION**
CONTROLLER SETPOINT	1	1	OFF = V / ON = I
TEMPERATURE	2	2	OFF = V / ON = I
RH	3	3	OFF = V / ON = I
CFM	4	4	OFF = V / ON = I
AUX.	5	5	OFF = V / ON = I

FIGURE 2.0

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2.1.2. Back Component and Connector Layout

Refer to Figure 2.1 for clarification on the back component and connector layout.

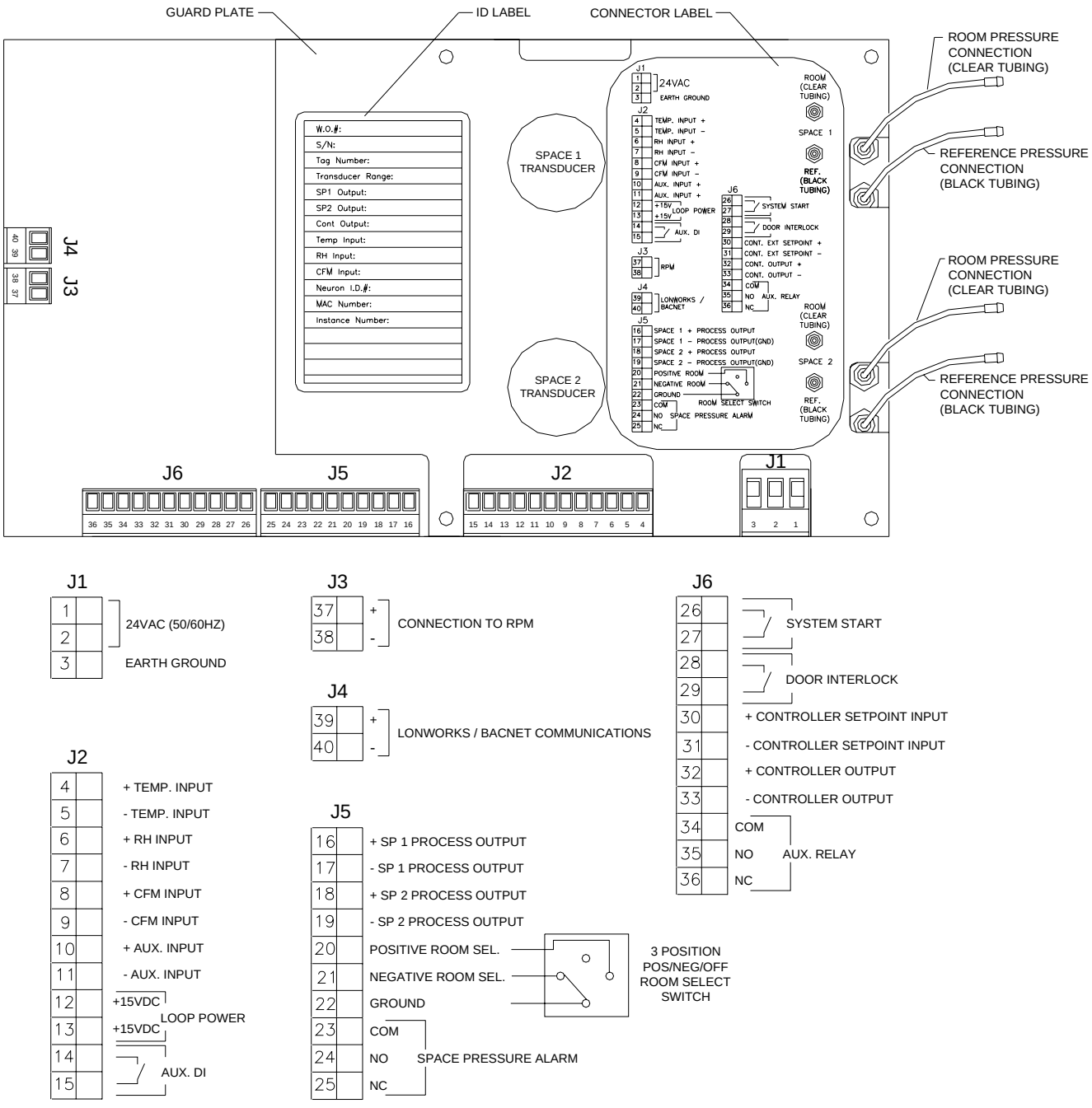

FIGURE 2.1

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2.2. HARDWARE SPECIFICATIONS OF INPUTS AND OUTPUTS

2.2.1. Power Input

The power input requirement is 20-28VAC at 50-60Hz. Line power is connected to input socket (J1). The unit has an isolated DC-DC converter, which creates electrical isolation between the power input and the unit.

2.2.2. Pressure Sensor Inputs

The SPM-4000 is factory configured for bi-directional or uni-directional pressure inputs. Bi-directional pressure input provides both positive and negative pressure values. Uni-directional pressure input provides only positive pressure values.

2.2.3. Analog Inputs

The Guardian Infinity supports five analog inputs; controller set point input, temperature sensor input, humidity sensor input, flow sensor input, and auxiliary analog input. Slide switches S1 and S9 are used for voltage/current input selection. For details, see Section 2.2.10.

2.2.4. Analog Outputs

The Guardian Infinity provides three channels 4-20mA or 0-10VDC analog outputs. Jumpers JP1, JP2 and JP3 are used in conjunction with the menu for voltage/current output selection. The maximum output load impedance for current output is 500 ohms. The minimum load impedance for voltage output is 1000 ohms.

2.2.5. Remote Space Pressure Alarm relay

The contact rating of the SPDT alarm relay is 0.6A at 125VAC or 110VDC and 2.0A at 30VDC.

2.2.6. Remote Operating Mode Select Switch

Connecting a single pole 3 position switch to pins 20, 21 & 22 of (J5) connector allows the user to remotely change SP1 and SP2 operating mode to Positive, Negative or Off. To activate the remote operating mode select input, the user must enter the Operating Mode menu and select the **OFF** mode (see section 3.7).

2.2.7. RPM Output

Pins 37-38 of (J3) are used to connect to a Paragon Remote Pressure Monitor (RPM).

2.2.8. Lonworks / Bacnet Output

Pins 39-40 of (J4) are used to connect to a LonWorks® or BACnet®-MS/TP communication network. The output requires an optional LonWorks or BACnet daughter board to be installed into the main board.

2.2.9. System Start

Pins 26-27 of (J6) are used to indicate that a fan system is enabled and to activate the internal control algorithm.

2.2.10. Door Interlock

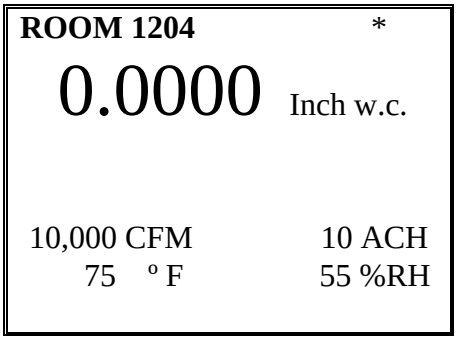
Pins 28-29 of (J6) are used to interface with a door interlock switch that when activated causes the controller output to either lock at that position or offset by a predetermined percentage.

2.2.11. IrDA Port

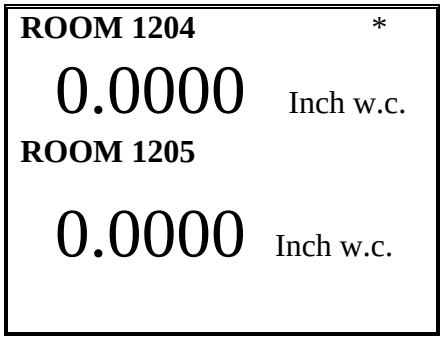
The Guardian Infinity provides IrDA communication with a handheld PDA or PC software MGUSim V2xx. For proper communication, the IrDA instrument must be aligned with the unit IrDA window and the maximum distance must be kept to 1 foot or less.

2.2.12. LCD

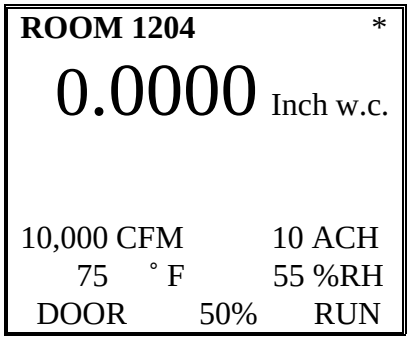
A 128x64 graphical LCD displays pressure, engineering units, and menus. The decimal point and polarity will be selected automatically based on the engineering unit and range selection.



Single Room display with optional CFM,ACH, Temperature & RH



Dual Room Display



Single Room Display with CFM,ACH, Temperature, RH & Controller status

2.2.13. Buzzer

A 85dB (max), 40mA buzzer is used for providing an audible alarm. The audible alarm has two sound options, continuous and interval. The buzzer sound options and alarm ON/OFF option are selected through the Audible Alarm menu (see section 13.3).

2.2.14. LED's

The Guardian Infinity unit has two surface mount LED's and two solid state LED's (Light Emitting diodes). LED functions are shown below:

Note: ACK refers to the alarm acknowledge keypad button.

2.2.14.1. Normal Status LED (DL3)

LED State	Operation State
On	Alarm goes off and ACK ok.
Off	Alarm state
Blink	Alarm goes off with no ACK

2.2.14.2. Alarm Status LED(DL4)

LED State	Operation State
On	Alarm state and ACK ok.
Off	No Alarm state
Blink	Alarm state but no ACK

2.2.14.3. Surface Mount LED's(DL1-2)

LED State	Status LED(DL1)	Diag. LED(DL2)
On	IrDA Comm. Established	-
Off	No IrDA Comm.	-
Blink	-	BACnet Data Sending

2.2.15. Buttons & Switches

The Guardian Infinity unit has a 6 button keypad. The Unit also has 4 switches and 3 jumpers. Buttons are used for menu navigation, data entering and alarm acknowledge. The functions are shown below:

2.2.15.1. Button Functions

Button	Button Function
UP	Menu Browser/Parameter Setting
DOWN	Menu Browser/ Parameter Setting
LEFT	Parameter Setting
RIGHT	Parameter Setting
MENU/ENTER	Menu Browser/ Parameter Setting
ESC/ACK	Menu Browser/AlarmAcknowledge

2.2.15.2. Switch Functions

Switch	Function
S2 (Slide switch)	Unit Power On/Off
S1.1 (Dip switch)	BACnet Rs-485 Termination On/Off
S1.2 (Dip switch)	Not Used

2.2.15.3. Analog Input Select Switch Functions

Analog Input	Switch Pos.	
Controller Setpoint Analog Input	S1-1 and S9-1 On: 4-20 mA	S1-1 and S9-1 Off: 0-10V
Temperature Analog Input	S1-2 and S9-2 On: 4-20 mA	S1-2 and S9-2 Off: 0-10V
Humidity Analog Input	S1-3 and S9-3 On: 4-20 mA	S1-3 and S9-3 Off: 0-10V
Flow Analog Input	S1-4 and S9-4 On: 4-20 mA	S1-4 and S9-4 Off: 0-10V
Auxiliary Analog Input	S1-5 and S9-5 On: 4-20 mA	S1-5 and S9-5 Off: 0-10V

2.2.15.4. Jumper Functions (See Figure 2.0)

Jumper	Function
JP1 (Space1 Analog Output)	Jumper 1-2 Pos: 4-20mA, Jumper 2-3 Pos:0-10V
JP2 (Space2 Analog Output)	Jumper 1-2 Pos: 4-20mA, Jumper 2-3 Pos:0-10V
JP3 (Controller Analog Output)	Jumper 1-2 Pos: 4-20mA, Jumper 2-3 Pos:0-10V

Caution: Making output current/voltage changes requires selecting the correct JP1, JP2 or JP3 position and making the same current /voltage selection in the Output Selection menu (See example in Section 3.16).

3. DISPLAY MENUS

3.1. POWER UP DISPLAY

The Power Up menu displays the product name, software revision installed, work order number and optional BACnet revision.

Guardian Infinity Software Rev. 60.xxx W.O. Number xxxxx Bacnet Rev. 10.xxx

3.2. SYSTEM DATA MENU

The System Data menu includes alarm values, operating modes and set point values. The alarm values shown will be determined by the operating mode selected. If positive mode is selected, the display will show only the positive alarm and set point values. If negative mode is selected, the display will show only the negative alarm and set point values.

To display the System Data menu, depress and hold the ENTER button for three seconds.

System Data	
SP1 Mode	Pos.
SP1 Low	+.005
SP1 High	+0.49
SP2 Mode	Pos.
SP2 Low	+.003
SP2 High	+.045
More Selections <down>	

3.3. FIELD SETUP & INITIAL PASSWORD MENU

To enter the Field Setup menu from the process display, the user will need to depress the UP/DOWN buttons simultaneously. The Field Setup Password menu will appear. The initial password shipped from the factory is 00000.

Field Setup Password (00000)

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3.4. OPERATING RANGE

The Operating Range value is the pressure range that correlates with the 0 to 10vdc or 4 to 20mA output signal. The allowable Operating Range value is from 40 to 100% of the Max. F.S. Value shown on the display. If an invalid value is entered, the display will change to an error message and the value will not be accepted.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Space 1 Op. Range
(Inch w.c.)
Max. F.S. Value
(0.1000)
Operating Range
(0.1000)

3.5. ZERO CALIBRATION

Zero Calibration allows the user to easily correct for any zero transducer shift. Any error found will be added to the value created during the factory calibration procedure. This correction value will be stored in an additional EPROM location in case the user needs to return the device to the original factory calibration. This can be done by entering the Factory Defaults menu (see Section 3.26). If a Zero Calibration is performed which exceeds factory limits, an error message stating this will appear and the reading will not be accepted.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Zero Cal
Space 1

→

Zero Cal. Space 1
Input Zero Value
(0.000 Pressure)
(Press Enter)

→

CPU Taking
Samples
(Please Wait)

3.6. ROOM IDENTIFIERS

The Room Identifiers menu allows the user to enter upper case alpha and numeric characters to identify Space 1 or optional Space 2 on the display. The user will be able to enter 16 characters. One character at a time will be entered, starting with the far left character.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Room Identifier
Space 1
Identifier
(ROOM 205)
Press Enter

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3.7. OPERATING MODE

The Operating Mode menu allows the user to change the room being monitored from an OFF room to a positive (POS) or negative (NEG) room. Selection of an OFF room disables alarm status lights, process display alarm text, audible alarm and remote alarm relay. Space 2 will only be displayed if turned on in the Factory menu. Selection of options described under the Operating Mode text is determined by the unit's application. Default is the POS mode.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Operating Mode
(OFF/POS/NEG)
Space 1
(Pos)

3.8. DISPLAY FILTER

The Display Filter menu allows the user to vary the Display Filter rate from 0 to 100 seconds to reach 98% of a step change. Space 2 will only be displayed if it is selected in the Factory menu.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Space 1 Filter
(0=Min./100=Max.)
(003) sec.

3.9. OUTPUT FILTER

The Output Filter menu allows the user to vary the Output Filter rate from 0 to 100 seconds. If the optional Space 2 is selected, both spaces will have the same filter rate value.

Field Setup Menu
Operating Range
Zero Cal
Room Identifiers
Operating Mode
Display Filter
Output Filter
More Options <down>

→

Output Filter
(0=Min./100=Max.)
(003) sec.

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3.10. BACKLITE TIMER

The Backlite Timer menu allows the user to control how long the backlite will remain on after a keypad button is pressed. Selection options will be 0 to 30 (0 = backlite on all the time and 1 to 30 represents the number of seconds until the backlite is turned off). The default is 0.

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm options
Transducer Cal.
More Options <down>

→

Backlite Timer
(0=On /30=Max.)
(00)

3.11. ENGINEERING UNITS

A list of engineering units are available for the user to select for display purposes to meet customer requirements. If the engineering units are changed, the Op Range values and Alarm Values will also be corrected. If two rooms are selected in the factory menu, both rooms will have the same engineering units. Default to be Inch w.c. When engineering units are changed, the decimal point will default to the maximum resolution.

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm options
Transducer Cal.
More Options <down>

→

Engineering Units
Inch w.c.
Pa
KPa
mm w.c.

3.12. DP DISPLAY FORMAT

The DP Display Format menu allows the user to change the number of digits shown to the right of the decimal point using the up/down buttons. The decimal point in the display will move right or left depending upon which button is depressed. If a change in decimal point position is made, the process display value must reflect the corrected weight value. If no decimal point is required, move the decimal to the far right position. If a change is made to the DP format, the Op Range & Alarm Values will also change. The default decimal point resolution is 0**.**0000.

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm options
Transducer Cal.
More Options <down>

→

DP Display Format
Decimal Resolution
(0.0000)

3.13. ALARM OPTIONS

3.13.1. Audible Alarm

The Audible Alarm menu allows the user to manually turn the audible alarm ON or OFF and select the audible alarm to be continuous or interval.

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm options
Transducer Cal.
More Options <down>

→

Alarm Options
Audible Alarm
Alarm Values
Alarm Delay

→

Audible Alarm
(On/Off)
(On)
Audible Alarm Mode
(Continuous)

3.13.2. Alarm Values (Space 1 Negative Alarm)

The Alarm Values (Space 1 Negative Alarm) menu allows the user to enter negative room alarm values. Engineering units displayed in the menu will change if the selection in the Engineering Units menu changes. If the engineering unit is changed, the values displayed will be converted to the new engineering unit. The decimal point resolution will represent the selection made in the DP Display Format menu (refer to Section 3.12).

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm options
Transducer Cal.
More Options <down>

→

Alarm Options
Audible Alarm
Alarm Values
Alarm Delay

→

Alarm Values
Space 1 Neg.
Space 1 Pos.

→

Space 1 Negative
(Inch w.c.)
Low Alarm (+0.0000)
High Alarm (-0.1000)

3.13.3. Alarm Values (Space 1 Positive Alarm)

The Alarm Values (Space 1 Postive Alarm) menu allows the user to enter positive room alarm values. Engineering units displayed in the menu will change if the selection in the Engineering Units menu changes. If the engineering unit is changed, the values displayed will be converted to the new engineering unit. The decimal point resolution will represent the selection made in the DP Display Format menu (refer to Section 3.12).

Field Setup Menu
More Options <up>
Backlite Timer
Engineering Units
DP Display Format
Alarm Options
Transducer Cal.
More Options <down>

→

Alarm Options
Audible Alarm
Alarm Values
Alarm Delay

→

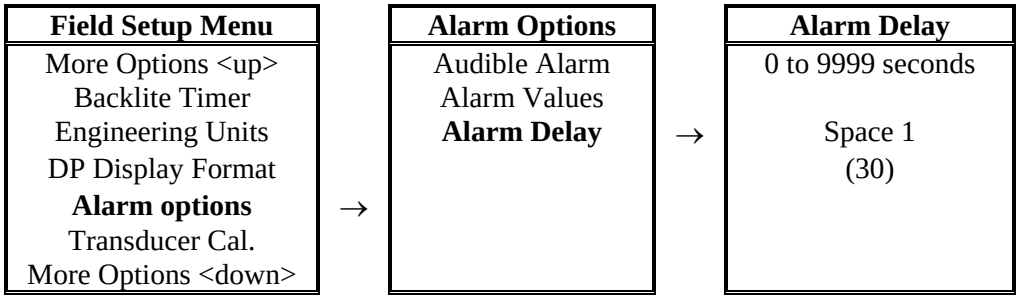
Alarm Values
Space 1 Neg.
Space 1 Pos.

→

Space 1 Positive
(Inch w.c.)
Low Alarm (+0.0000)
High Alarm (+0.1000)

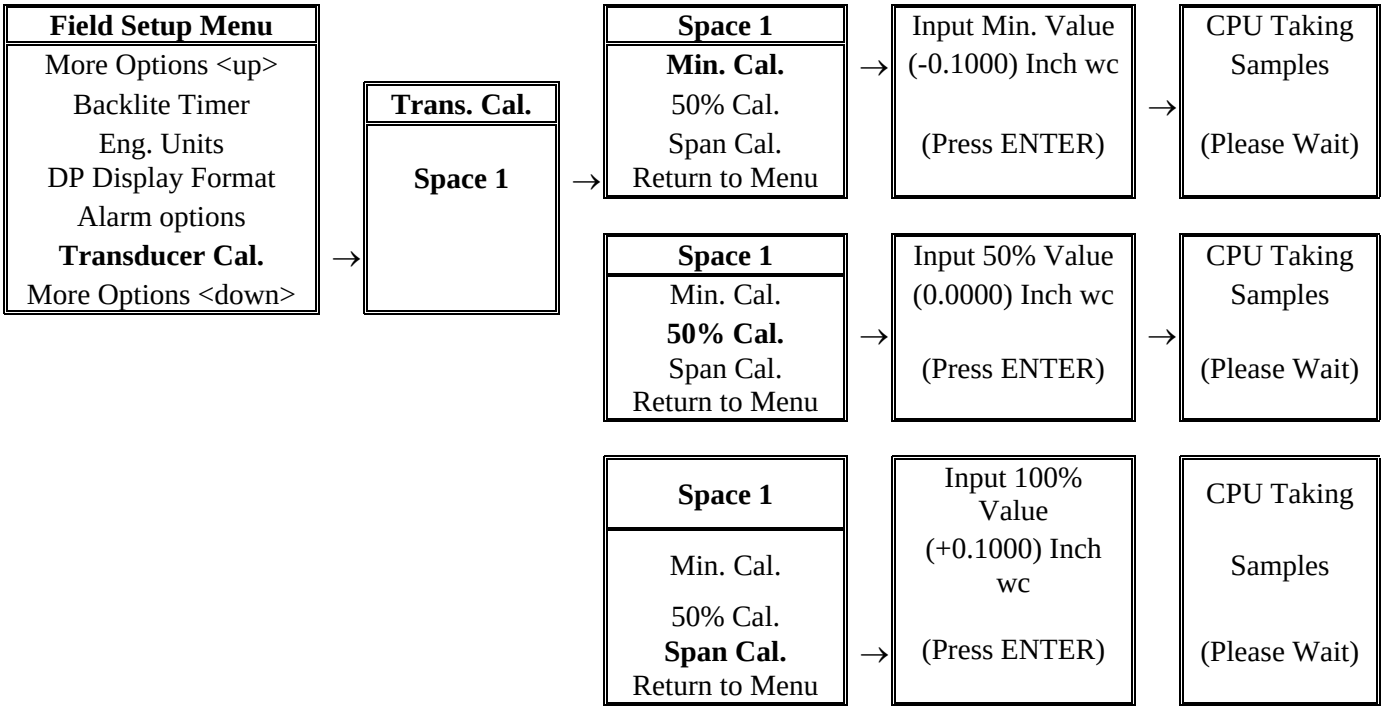
3.13.4. Alarm Delay

The Alarm Delay menu allows the user to delay alarm activation after an alarm event occurs from 0 to 9999 seconds. Space 2 is displayed only if turned ON in factory menu. The default value is 30 seconds.



3.14. TRANSDUCER CALIBRATION

A precision low pressure source (Paragon PS-100 or equivalent and a manometer are required to perform the transducer calibration. The Transducer Calibration menu will give the user three calibration points to select from. It is not necessary to perform all three calibration points. The correction values are to be store into an additional EPROM location and combined with the original calibration values performed in the factory menu. A user can return the device to its original factory calibration by selecting the Factory Defaults menu in the Field Setup menu (see section 3.26).



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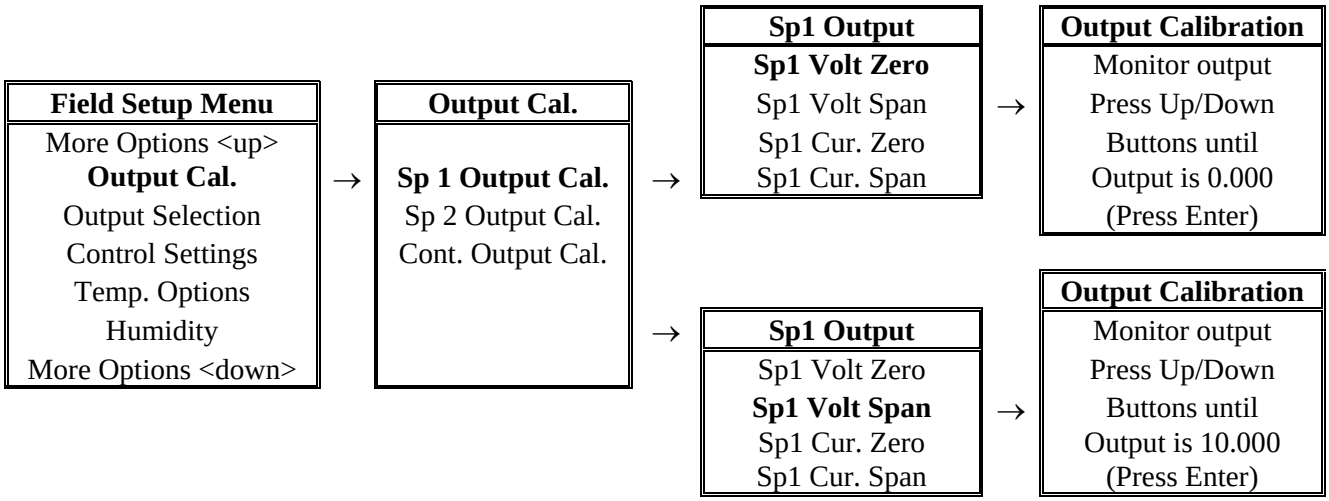
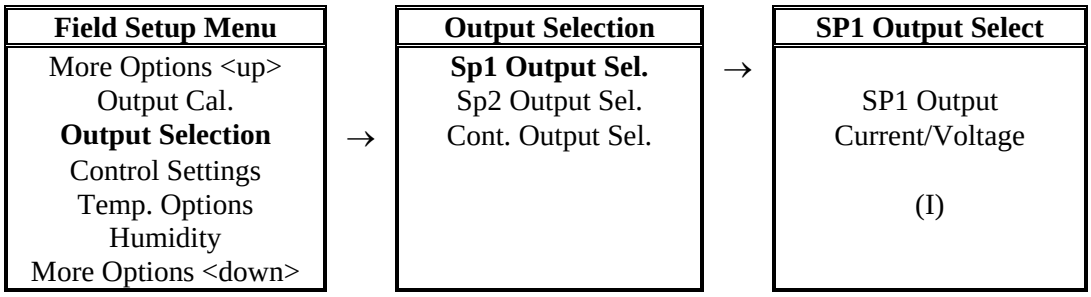
3.15. OUTPUT CALIBRATION

The Output Calibration menu allows the user to make corrections to the minimum and maximum Process and Controller Output Values (refer to Section 2.1.2). By applying minimum and maximum input pressures, Zero and Span Process Output Values can be set to the output limits. Use the UP/DOWN buttons to make any correction necessary. By pressing the Enter button, these correction values are stored in the EPROM. Use the same correction procedure to set the minimum and maximum Controller output limits.



3.16. OUTPUT SELECTION

The Output Selection menu allows the user to make Current (I)/Voltage (V) output changes to Space 1, Space 2 and Controller outputs. Along with a menu change, repositioning of jumpers JP1, JP2 and JP3 is required (Refer to Section 2.1.1). The following example is shown for Space 1; Space 2 and Controller Output Selection are performed the same.



3.17. CONTROL TUNING AND SETTINGS

The Controller menus will only be displayed on units with the controller option purchased.

3.17.1. Tuning Parameters

The Tuning Parameters menu allows the user to tune the controller parameters to match the system dynamics. The Proportional Band value can be entered as a percent value from 1 to 100%. Reset and Inverse Derivative values will range from 0 to 300 seconds. Default values will be Proportional Band = 10%, Reset (Integrator Tim) = 70 seconds and Inverse Derivative = 60 seconds.

Field Setup Menu		Control Settings		Tuning Parameters
More Options <up>		**Tuning Parameter**	→	Proportional Band
Output Cal.		Action		(0010)%
Output Selection		Door Interlock		Integrator Tim
Control Settings	→	Setpoint Int/Ext		(070) sec.
Temp. Options		Cont. Setpoints		1/Derivative
Humidity		Output Start		(060) sec.
More Options <down>		More Options <down>		

3.17.2. Action

The Action menu allows the user to select between Direct and Reverse action. The default is Reverse action.

Field Setup Menu		Control Settings		Action
More Options <up>		Tuning Parameter		Direct/Reverse
Output Cal.		**Action**	→	
Output Selection		Door Interlock		(Reverse)
Control Settings	→	Setpoint Int/Ext		
Temp. Options		Cont. Setpoints		
Humidity		Output Start		
More Options <down>		More Options <down>		

3.17.3. Door Interlock

The Door Interlock menu allows the user to select between two output options when the door interlock input is activated. The **Lock** function will lock the output at the value it was when the door interlock input was activated. When the door interlock input is de-activated, the output resumes automatic modulation to balance the process to the setpoint value. The **% Change** function will add or subtract a percent of full scale output to the output value when the door interlock input is activated. When the door interlock input is deactivated the output will immediately go to the previous output value and resume automatic modulation to balance the process to the setpoint value. The default value is 000%.

Field Setup Menu		Control Settings		Door Interlock
More Options <up>		Tuning Parameter		Lock / % Change
Output Cal.		Action		
Output Selection		**Door Interlock**	→	(Lock)
Control Settings	→	Setpoint Int/Ext		
Temp. Options		Cont. Setpoints		% Change ±100
Humidity		Output Start		(+50)
More Options <down>		More Options <down>		

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3.17.4. Setpoint Internal/External

The Setpoint menu allows the user to select between internal (INT) setpoint (entered by the menu or through the network) or remote external (EXT) setpoint. The default is INT.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Control Settings
Tuning Parameter
Action
Door Interlock
Setpoint Int/Ext
Cont. Setpoints
Output Start
More Options <down>

→

Setpoint
INT/EXT
(INT)

3.17.5. Controller Setpoint Values

The Controller Setpoints menu allows the user to enter Positive, Negative and Off setpoint values. The default values is 0.0000. If values entered are outside of acceptable range, an error message will indicate the acceptable range.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Control Settings
Tuning Parameter
Action
Door Interlock
Setpoint Int/Ext
Cont. Setpoints
Output Start
More Options <down>

→

Cont. Setpoints
Pos.
(0.0000)
Neg.
(0.0000)
Off
(0.0000)

3.17.6. Output Start

The Output Start menu allows the user to select the output condition when the System Start input is not active. If Min. is selected, the output will start at 0vdc (4ma) and modulate from there. If Max. is selected, the output will start at 10vdc (20ma) and modulate from there. The default is MIN.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Control Settings
Tuning Parameter
Action
Door Interlock
Setpoint Int/Ext
Cont. Setpoints
Output Start
More Options <down>

→

System OFF
Output Value
Min./Max.
(MIN)

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3.17.7. Alarms ON/OFF

The Alarms ON/OFF menu allows user to determine if all alarms will be active (ON) or inactive (OFF) when the System Start input is de-activated. The default is OFF.

Field Setup Menu		Control Settings		System Start
More Options <up>		More Options <up>		
Output Cal.		**Alarm ON/OFF**	→	De-activated
Output Selection		Output Override		All Alarm Status
Control Settings	→	Sys. Alarm Delay		(ON/OFF)
Temp. Options				
Humidity				(OFF)
More Options <down>				

3.17.8. Output Override

The Output Override menu allows the user to manually set the controller output to a fixed value. The defaults are OFF and 50%.

Field Setup Menu		Control Settings		Output Override
More Options <up>		More Options <up>		(OFF/ON)
Output Cal.		Alarm ON/OFF	→	(OFF)
Output Selection		**Output Override**		
Control Settings	→	Sys. Alarm Delay		Output Value
Temp. Options				(0-100)
Humidity				(50)%
More Options <down>				

3.17.9. System Alarm Delay

The System Alarm Delay menu allows the user to enter an alarm delay value in seconds that will start after System Start input is activated. The default is 30 seconds.

Field Setup Menu		Control Settings		System Start
More Options <up>		More Selections ↑		Alarm Delay
Output Cal.		Output Override		
Output Selection		**Sys. Alarm Delay**	→	(0 to 999)
Control Settings	→			
Temp. Options				(030) sec.
Humidity				
More Options <down>				

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3.18. TEMPERATURE OPTIONS

Menus are displayed only if the Temperature Option is factory installed.

3.18.1. Temperature Display OFF/ON

The Temperature Display ON/OFF menu allows user to turn the displayed temperature value on or off. The default is ON.

Field Setup Menu		Temp. Options		Temperature
More Options <up>		**Display OFF/ON**	→	Display
Output Cal.		Temp. Units		(OFF/ON)
Output Selection		Temp. Range		
Control Settings		Alarm OFF/ON		(ON)
Temp. Options	→	Alarm Values		
Humidity		Lonworks Temp.		
More Options <down>				

3.18.2. Temperature Units

The Temperature Units menu allows the user to select the temperature units to be displayed. The default is ºF.

Field Setup Menu		Temp. Options		Temp. Units
More Options <up>		Display OFF/ON		
Output Cal.		**Temp. Units**	→	ºF / ºC
Output Selection		Temp. Range		
Control Settings		Alarm OFF/ON		(ºF)
Temp. Options	→	Alarm Values		
Humidity		Lonworks Temp.		
More Options <down>				

3.18.3. Temperature Range

The Temperature Range menu allows the user to enter the minimum and maximum temperature values which will correspond with the 0-10vdc or 4-20ma input signals.

Field Setup Menu		Temp. Options		Temperature Range
More Options <up>		Display OFF/ON		(ºF)
Output Cal.		Temp. Units		
Output Selection		**Temp. Range**	→	Min. Value
Control Settings		Alarm OFF/ON		(+000)
Temp. Options	→	Alarm Values		
Humidity		Lonworks Temp.		Max. Value
More Options <down>				(+999)

3.18.4. Temperature Alarm ON/OFF

The Temperature Alarm ON/OFF menu allows the user to enable or disable the Low or High Temperature Alarm function. The default values are ON.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Temp. Options
Display OFF/ON
Temp. Units
Temp. Range
Alarm OFF/ON
Alarm Values
Lonworks Temp.

→

Alarm ON/OFF
(OFF/ON)
Low Alarm
(ON)
High Alarm
(ON)

3.18.5. Temperature Alarm Values

The Temperature Alarm Values menu allows the user to enter the Temperature Low and High Alarm values. Values and engineering unit will be automatically corrected if changed to a different engineering unit (ºF or ºC). The default values are the Min and Max. values entered in the Temp. Range menu (refer to Section 3.18.3).

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Temp. Options
Display OFF/ON
Temp. Units
Temp. Range
Alarm OFF/ON
Alarm Values
Lonworks Temp.

→

Alarm Values
(ºF **)**
Low Alarm
(+000)
High Alarm
(+999)

3.18.6. LonWorks Temperature

The LonWorks Temperature menu allows the user to disable the Temperature analog input and enter the Temperature value via LonWorks network communications (LonWorks Option Required).

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Temp. Options
Display OFF/ON
Temp. Units
Temp. Range
Alarm OFF/ON
Alarm Values
Lonworks Temp.

→

Lonworks Temp.
Lonworks
Temperature
(OFF/ON)
(OFF)

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3.19. HUMIDITY OPTIONS

Menus are displayed only if the Humidity Option is factory installed.

3.19.1. Humidity Display ON/OFF

The Humidity Display ON/OFF menu allows the user to turn the Humidity value on the display on or off. The default is OFF.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Humidity
Humidity ON/OFF
Alarm ON/OFF
Alarm Values
Lonworks RH

→

Displayed
Humidity Value
(OFF/ON)
(ON)

3.19.2. Humidity Alarm ON / OFF

The Humidity Alarm On/OFF allows the user to enable or disable the High or Low humidity alarm function. The default value is ON**.**

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Humidity
Humidity ON/OFF
Alarm ON/OFF
Alarm Values
Lonworks RH

→

Alarm ON/OFF
Low Alarm (ON)
High Alarm (ON)

3.19.3. Humidity Alarm Values

The Humidity Alarm Values menu allows the user to enter High and Low humidity alarm values. Default values are 0 and 100%.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Humidity
Humidity ON/OFF
Alarm ON/OFF
Alarm Values
Lonworks RH

→

Alarm Values
Low Alarm (000)%
High Alarm (100)%

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3.19.4. LonWorks RH

The LonWorks RH menu allows the user to disable the humidity analog input and enter the humidity value via LonWorks network communications.

Field Setup Menu
More Options <up>
Output Cal.
Output Selection
Control Settings
Temp. Options
Humidity
More Options <down>

→

Humidity
Humidity ON/OFF
Alarm ON/OFF
Alarm Values
Lonworks RH

→

Lonworks RH
Lonworks Humidity (OFF/ON)
(OFF)

3.20. FLOW AND ACH OPTIONS

Menus are only displayed if Options are factory installed.

3.20.1. Flow/ACH Display ON/OFF

The Flow/ACH ON/OFF menu allows the user to turn the Flow value (CFM) and Air Changes per Hour (ACH) on the display On or Off. The formula for calculating ACH value is: **(Flow x 60) / Room Volume**.

Field Setup Menu
More Options <up>
Flow/ACH
MAC Address
Instance Number
Password Timeout
Field Password
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

Displayed
Flow/ACH (OFF/ON)
(OFF)

3.20.2. Flow Range

The Flow Range menu allows the user to enter the maximum flow value which corresponds to 10vdc or 20ma.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

Max. Flow Value
CFM (999999)

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3.20.3. Room Volume

The Room Volume menu allows the user to enter the room volume in cubic feet for ACH calculations. The formula for ACH calculation is: **(Flow x 60) / Room Volume**.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

Room Volume
FT^3
(00000)

3.20.4. Flow Alarm ON/OFF

The Flow Alarm ON/OFF menu allows the user to turn the Flow alarm ON or OFF. The default is ON.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow /ACH
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

Flow Alarm
(OFF/ON)
(ON)

3.20.5. Flow Alarm Values

The Flow Alarm Values menu allows the user to enter the flow Low and High alarm values. The default for the Min. value is 000000. The Max. value will be the values entered into the Flow Range menu (refer to Section 3.20.2).

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

Flow Alarm Value
(CFM)
Low Alarm
(000000)
High Alarm
(999999)

3.20.6. ACH Alarm ON/OFF

The ACH Alarm On/OFF menu allows the user to turn the ACH alarm ON or OFF. The default is ON.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
Flow/ACH ON/OFF
Flow Range
Room Volume
Flow Alarm ON/OFF
Flow Alarm Values
ACH Alarm ON/OFF
More Options <down>

→

ACH Alarm
(OFF/ON)
(ON)

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3.20.7. ACH Alarm Value

The ACH Alarm Value menu allows the user to enter the ACH Low alarm value. The default value is 00.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
More Options <up>
ACH Alarm Value
Lonworks Flow/ACH

→

ACH Alarm Value
Low Alarm
(00)

3.20.8. LonWorks Flow/ACH

The LonWorks Flow/ACH menu allows the user to disable the FLOW (CFM) analog input and enter the flow value via LonWorks network communications.

Field Setup Menu
More Options <up>
Output Cal.
Control Settings
Temp. Options
Humidity
Flow/ACH
More Options <down>

→

Flow/ACH
More Options <up>
ACH Alarm Value
Lonworks Flow/ACH

→

Lonworks Flow/ACH
Lonworks Flow/ACH
(OFF/ON)
(OFF)

3.21. MAC ADDRESS

The MAC Address menu allows the user to set a unique device address when connecting a Guardian Infinity to a Paragon Remote Pressure Monitor (RPM). The default is 201.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

MAC Address
(201)
(default = 201)
(range = 201 to 254)

3.22. INSTANCE NUMBER

The Instance Number menu allows the user to set a unique device network address for BACnet communications. The default is 1201.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

Instance Number
(1201)
(default = 1201)

3.23. PASSWORD TIMEOUT

Password Time Out is the amount of time a user has after the last key stroke to make changes before the device will again request a password to be entered. The default is 15 minutes.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

Password Timeout
(minutes)
(15)

3.24. FIELD PASSWORD

The Field Password menu allows the user to enter a unique 5 digit numeric password. An error message will appear if the user does not enter the same password both times. The initial factory set password is 00000.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

Enter New
Password
(00000)
Press Enter

→

Re-Enter
New Password
(00000)
Press Enter

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3.25. FACTORY PASSWORD

The Factory Password menu allows the factory personal access to the factory menu.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

Enter Factory
Password
(00000)
Press Enter

3.26. FACTORY DEFAULTS

If field changes are made to the Guardian Infinity program and it is determined that they were made incorrectly, by selecting **YES** and pressing enter in both of the Factory Defaults menus, the device will return settings to the original factory settings. The defaults are NO.

Field Setup Menu
More Options <up>
MAC Address
Instance Number
Password Timeout
Field Password
Factory Password
Factory Defaults

→

Factory Defaults
Set To
Factory Defaults
(NO/YES)
(NO)

→

Factory Defaults
Verify Setting
Factory Defaults
(NO/YES)
(NO)

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4. TROUBLESHOOTING GUIDE

TROUBLESHOOTING TABLE	
SYMPTOM	**SOLUTION**
1. Status LED is not illuminated/LCD Display is Blank	1. Verify ON/OFF switch is in ON position (see Section 2.1.1).
	2. Verify correct input power and connection at connector J1 (see Section 2.1.2).
	3. Verify input power wire insulation has been properly removed and the wire fully inserted into the J1 power plug.
	4. Contact Factory Service Department.
2. Display characters are too dim or too dark	1. Remove front cover. Adjust Display Text Intensity potentiometer R20 located at the top of the board.
	2. Contact Factory Service Department.
3. Display indicates **zero pressure** and does not respond to input pressure changes	1. Verify room calibration pressure tubing is connected as shown in Section 2.1.1.
	2. Squeeze each room calibration tube independently with your fingers. If the display responds, proceed to Step 3. If the display does not respond, contact Factory Service Department.
	3. Turn the power switch to OFF. Remove the Guardian Infinity from the wall box and verify the input signal tubing is connected as shown in Section 2.1.2.
	4. Contact Factory Service Department.
4. Display is reading a pressure but does not respond to input pressure changes	1. Turn the power switch to OFF. Remove the Guardian Infinity from the wall box and inspect for possible pinched or disconnected tubing. Reinstall and verify operation.
	2. Remove ROOM and REF end of Room Calibration tubing (see Section 2.1.1). If the display returns to a zero reading, check for pinched or plugged tubing at the PE-4000 pressure sensor or input signal lines. If the display does not respond, contact the factory Service Department.

TROUBLESHOOTING TABLE	
SYMPTOM	**SOLUTION**
5. No Process output (Voltage/Current) or Incorrect Output	1. Verify correct output jumper selection (See JP1, JP2 & JP3 in Section 2.1.1). Verify selections are correct in Output Selection menu's (see Section 3.16).
	2. Disconnect output signal wires and verify output signal at Guardian Infinity connector J5 is correct (see Section 2.1.2).
	3. Contact Factory Service Department.
6. Audio Alarm not functioning but Red Alarm Status LED on the front panel is ON	1. Verify Audible Alarm is turned ON in Audible Alarm Menu (see Section 3.13.1).
	2. Verify alarm is not turned OFF via the communication network.
	3. Contact Factory Service Department.
7. Red Alarm LED remains ON	1. Verify correct Operating Mode (see Section 3.7).
	2. Verify alarm setpoint values.
	3. Verify input pressure tubing is connected correctly (see Section 2.1.2).
	4. Contact Factory Service Department.
8. Alarm Mode not functioning	1. Verify correct Operating Mode (see Section 3.7).
	2. Verify alarm setpoint values.
	3. Verify input pressure tubing is connected correctly (See section 2.1.2)
	4. Controller Option only - All Alarms OFF section. Follow the instructions in section 3.17.7.

TROUBLESHOOTING TABLE	
SYMPTOM	**SOLUTION**
9. LonWorks not communicating with the Guardian Infinity	1. Turn power switch OFF. Remove Guardian Infinity from the wall box. Carefully turn power switch ON. Press service pin located on LonWorks board. Turn power switch to OFF and reinstall Guardian infinity. Turn power to On.
	2. Swap wires on J4 pins 13 & 14 (see Section 2.1.2).
	3. Contact Factory Service Department.
10. BACnet not communicating with the Guardian Infinity	1. Verify two devices do not have the same Instance Number and MAC code. Change to an unused Instance Number and MAC code.
	2. Verify wires connected to J4 pins 39 & 40 are correct. If not swap wires and retest.
	3. Contact Factory Service Department.
11. Field Setup Password is rejected	1. Incorrect password was entered. Verify password accuracy.
	2. Contact Factory Service Department.

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